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FILE 'MEDLINE, CAPLUS, BIOSIS' ENTERED AT 09:19:53 ON 24 SEP 2002

L1 517 S (TRANSFER? OR TRANSFORM? OR TRANSFECT?) AND (NERVE CELL OR NE

L2 138 S L1 AND PD<1999

L2 ANSWER 2 OF 138 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:745281 CAPLUS
DOCUMENT NUMBER: 130:105584
TITLE: Functional redundancy of acetylcholinesterase and neuroligin in mammalian neuritogenesis
AUTHOR(S): Grifman, Mirta; Galyam, Nilly; Seidman, Shlomo; Soreq, Hermona
CORPORATE SOURCE: Department of Biological Chemistry, Hebrew University of Jerusalem, Jerusalem, 91904, Israel
SOURCE: Proceedings of the National Academy of Sciences of the United States of America (**1998**), 95(23), 13935-13940
CODEN: PNASA6; ISSN: 0027-8424
PUBLISHER: National Academy of Sciences
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Accumulated evidence attributes noncatalytic morphogenic activity(ies) to acetylcholinesterase (AChE). Despite sequence homologies, functional overlaps between AChE and catalytically inactive AChE-like cell surface adhesion proteins have been demonstrated only for the Drosophila protein neurotactin. Furthermore, no mechanism had been proposed to enable signal transduction by AChE, an extracellular enzyme. Here, we report impaired neurite outgrowth and loss of neurexin 1.alpha. mRNA under **antisense** suppression of AChE in PC12 cells (AS-ACHE cells). Neurite growth was partially rescued by addn. of recombinant AChE to the solid substrate or by **transfection** with various catalytically active and inactive AChE variants. Moreover, overexpression of the homologous neurexin 1 ligand, neuroligin-1, restored both neurite extension and expression of neurexin 1.alpha.. Differential PCR display revealed expression of a novel gene, nitzin, in AS-ACHE cells. Nitzin displays 42% homol. to the band 4.1 protein superfamily capable of linking integral membrane proteins to the cytoskeleton. Nitzin mRNA is high throughout the developing nervous system, is partially colocalized with AChE, and increases in rescued AS-ACHE cells. Our findings demonstrate redundant neurite growth-promoting activities for AChE and neuroligin and implicate interactions of AChE-like proteins and neuroexins as potential mediators of cytoarchitectural changes supporting neuritogenesis.

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT